8 November 1993

Mr. Jesse Hochstadt
Physics Today
335 East 45th Street
New York, **NY 10017**

Dear Mr. Hochstadt,

The following is my response to Mr. Silvertooth's letter (MS 6719L):

The JPL experiment is indeed similar in spirit to that of Cialdea, but *not* the earlier MIT experiments (which involved the comparison of laser cavities). However, there **are** three distinct ions: 1) atomic frequency standards are used instead of lasers, 2) the frequency standards are separated by sewed kilometers instead of by only a small distance (< 2 meters), and 3) greater sensitivity is possible. Tyapkin's cone.lusicms were refuted by Mansouri and Sexl (see paper II).[1] The relevancy of the JPL experiment, and certain others, has been established in a detailed analysis performed by Will (which evidently went unread by Mr. Silvertooth, although it was cited in my previous letter).[2] We are only seeking funds sufficient to perform the experiment at its full potential; the technology has already been developed at ,11'1, under other programs. The main improvements planned are: 1) replace the hydrogen masers with more stable trapped ion standards, 2) isolate and correct sources of systematic error, **and** 3) allow the Earth to rotate for 100 clays or more to maximize the sensitivity of the experiment.

Sine.cdy,

T. E. Krisher

Dr. Timothy P. Krisher
Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California 91 109

References

1. R. Mansouri and n,. U. Sexl, Gen. Relativ. and Gravit. S, 497 (1 977); s, 515 (1977); 8, 809 (1977).

2. C. M. Will, Phys. Rev. D 45, 403 (1992).